

THE TROPICAL DISTURBANCE OF AUGUST 26-31, 1934

By W. R. STEVENS

[Weather Bureau, Washington, October 1934]

Disturbed conditions were first observed in connection with this storm on the morning of August 26, when two vessels in the north-central Gulf of Mexico reported squalls, and the wind velocity at Port Eads, La., was 28 m. p. h. from the east. During the night of August 25, 5.50 inches of rain fell at Port Eads. By the night of the 26th there had been an increase in wind velocity and a decrease in pressure, with a movement of the disturbed condition toward the west-northwest. However, no definite center had developed at this time; but storm warnings were issued for the Texas coast between Port Arthur and Port O'Connor. By the morning of the 27th a definite center had developed and was located about 50 miles east of Galveston, the lowest reported pressure being 29.46 inches, and the highest wind velocity 70 m. p. h. (estimated). A maximum wind velocity of 30 m. p. h. from the east-northeast was recorded at Port Arthur during the night of August 26. Storm warnings were changed to hurricane warnings from Port Arthur to Galveston at 8:30 a. m. E. S. T. on August 27, and hurricane warnings were issued west of Galveston to Freeport at 2:45 p. m. Caution was also advised against possibility of dangerous gales west of Freeport to Matagorda. It was apparent at this time that the disturbance was turn-

ing more to the west or west-southwest. After the 27th, the storm moved south-southwestward, and crossed the Mexican coast a short distance north of Tampico during the night of August 31. Such a course of a tropical disturbance along the Texas coast is unprecedented.

The lowest pressure reported at any coastal station was 29.62 inches at Galveston on the 27th. Approximately the same pressure was recorded by independent observers at Freeport during the early morning of the 28th.

The highest wind velocities recorded at coastal stations during the storm were as follows: Port Arthur, 34 m. p. h.; Galveston, 42 m. p. h.; and Freeport, 50-60 m. p. h. (estimated).

The lowest pressure and highest wind velocity were reported by the steamship *Simon von Utrecht* on the afternoon of August 28, when the vessel was about 75 miles south-southwest of Galveston: Pressure, 29.34 inches; wind velocity, 80 m. p. h. (estimated).

There was no serious damage along the Texas coast. After receipt of the storm warnings on August 26, beaches and low sections were evacuated, and precautions taken against property damage in the danger zone indicated in the warnings. No loss of life was reported on the coast or at sea.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in Charge of Library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

Commonwealth solar observatory

Memoir. Canberra. 1934. no. 3. Measurements of atmospheric ozone made at the Commonwealth solar observatory, Mount Stromlo, Canberra, during the years 1929 to 1932, by A. J. Higgs, B. Sc. Canberra. March 1934. 29 p. figs., plates. 31 cm.

Leighly, John Barger

Marquesan meteorology. Notes on the meteorologic observations made in the Marquesas islands by the Pacific entomo-

logical survey during the years 1929-1932, by John B. Leighly, Berkeley, California, University of California press, 1933. p. 147-172 incl. illus. (map), tables, diagrs. 26 cm. (University of California publications in geography. v. 6, no. 4.)

United States. Coast & geodetic survey

Alaska magnetic tables and magnetic charts for 1930, by Daniel L. Hazard, chief magnetician, Division of terrestrial magnetism and seismology. Washington, U. S. Govt. printing office, 1934. 35 p. incl. tables. 4 fold. charts. 23 cm. (Serial no. 570.) At head of title: U. S. Department of commerce. Daniel C. Roper, secretary. Coast and geodetic survey. R. S. Patton, director. . . . Lithographed.

SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING
SEPTEMBER 1934

By IRVING F. HAND, Assistant in Solar Radiation Investigations

For a description of instruments employed and their exposures, the reader is referred to the January 1932 REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged above normal for September at all three Weather Bureau stations.

Table 2, on the other hand, shows a deficiency in the amount of total solar and sky radiation received on a

horizontal surface at all stations except Fairbanks, Alaska.

Table 3 shows lower turbidity values and less water content of the atmosphere than were recorded during the summer months.

Polarization measurements obtained on 6 days at Washington give a mean of 54 percent, with a maximum of 60 percent on the 17th. At Madison measurements made on 7 days give a mean of 57 percent with a maximum of 63 percent on the 17th. The values at Washington are close to the September normals, while those at Madison are somewhat below normal.

TABLE 1.—Solar radiation intensities during September 1934

(Gram-calories per minute per square centimeter of normal surface)

WASHINGTON, D. C.

Date	Sun's zenith distance											Local mean solar time	
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon		
	75th mer. time	Air mass											
		A. M.						P. M.					
		e	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0		e
Sept. 1	<i>mm</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>cal.</i>	<i>mm</i>		
Sept. 4	8.81				1.12	1.25	1.45	1.14			9.14		
Sept. 17	15.65				1.17	1.42					15.65		
Sept. 18	9.83	0.76	0.84	0.97	1.17	1.42					10.97		
Sept. 19	9.14	.76	.87	.99							8.81		
Sept. 20	9.14					1.21					9.93		
Sept. 28	11.38			.60	.82						11.81		
Sept. 28	8.18			.95	1.11						8.81		
Means		(.76)	(.86)	.88	1.06	1.33	(1.14)						
Departures		+.07	+.11	+.01	+.02	+.02	+.08						

MADISON, WIS.

Sept. 5.....	9.83		0.82	0.97	1.14						9.14
Sept. 7.....	8.18		1.05	1.17	1.30	1.49					8.48
Sept. 8.....	8.48		.95	1.10	1.24						7.29
Sept. 17.....	6.50		.92	1.08	1.30	1.49	1.24				7.04
Sept. 25.....	15.11		.79	.95	1.16						15.65
Sept. 27.....	4.57	0.94	1.00	1.07	1.32	1.59	1.25				4.95
Means.....		(.94)	.89	1.06	1.24	1.49	(1.24)				
Departures.....		+.08	-.01	+.04	+.08	+.09	+.07				

* Extrapolated.

TABLE 1.—Solar radiation intensities during September 1934—Con.

LINCOLN, NEBR.

Date	Sun's zenith distance										Local mean solar time	
	8a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°		
	75th mer. time	Air mass										
		A.M.					P.M.					
		e.	5.0	4.0	3.0	2.0	*1.9	2.0	3.0	4.0	5.0	e.
Sept. 4.....	<i>mm</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>cal</i>	<i>mm</i>	
Sept. 6.....	7.87	0.86	0.98	1.12	1.27	1.46					8.18	
Sept. 7.....	7.29				1.31	1.51	1.29	1.06	0.90	0.86	6.02	
Sept. 7.....	6.50	.82	.96	1.02	1.31	1.51	1.31	1.17	1.03	.93	6.02	
Sept. 8.....	7.29	.86	.98	1.12	1.29	1.52					6.78	
Sept. 11.....	10.97	.85	.93	1.05	1.20	1.43	1.17	.96	.77	.62	16.79	
Sept. 12.....	18.59				1.13	1.30	1.10	.95	.82	.70	17.96	
Sept. 15.....	5.79	.99	1.09	1.24	1.39	1.55					4.95	
Sept. 17.....	7.29	.65	.75	.93							11.38	
Sept. 18.....	7.57	.84	.96	1.08	1.26	1.43	1.19	1.02	.86	.76	7.87	
Sept. 19.....	7.87	.67	.80	.93	1.13	1.32					11.38	
Sept. 21.....	5.16			.97	1.23	1.47	1.29	1.10	.92	.78	4.95	
Sept. 22.....	7.04	.70	.84	.97	1.16	1.34					7.32	
Sept. 27.....	5.79	.84	.98	1.13	1.36	1.56	1.28	1.08	.90	.84	6.27	
Sept. 28.....	8.18						1.11	1.00	.84	.76	12.24	
Means.....		.81	.93	1.05	1.25	1.45	1.22	1.04	.89	.77		
Departures.....		+.09	+.11	+.10	+.13	+.04	+.07	+.06	+.05	+.04		

BLUE HILL, MASS.

Sept. 1.....	9.6				1.07	1.27	1.05				7.4
Sept. 11.....	11.1				1.09	1.38	1.15	0.94			11.1
Sept. 13.....	10.7						1.21	.98			7.6
Sept. 20.....	12.8		1.14	1.21	1.31	1.42					12.3
Sept. 25.....	13.2				1.23	1.43	1.12	.90			13.7
Sept. 26.....	14.3				1.05	1.19	1.31	1.15	.90		16.1
Sept. 28.....	7.9		1.05	1.19	1.33	1.41	1.18	.97	0.84		7.9
Means.....			(1.10)	1.15	1.20	1.37	1.14	.94	(.84)		

TABLE 2.—Average daily totals of solar radiation (direct+diffuse) received on a horizontal surface

Week beginning—	Gram-calories per square centimeter														
	Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Miami	New Orleans	Riverside	Blue Hill	Mount Washington
1934	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Sept. 3.....	314	317	488		255	601	406	203	523	478	461	437	492	312	356
Sept. 10.....	228	278	443		229	580	265	331	525	463	286	237	440	284	376
Sept. 17.....	392	278	374	311	258	451	280	243	396	463	331	367	364	191	300
Sept. 24.....	315	288	304	290	251	544	201	193	396	517	418	276	480	282	283
Departures from weekly normals															
Sept. 3.....	-69	-59	+26		-58	+50	+48	-64	-3		+11	+53			
Sept. 10.....	-34	-61	+2		-76	+53	-67	+48	+19		-160	-119			
Sept. 17.....	+33	-63	-39	-4	-41	-39	-35	+90	-82		-119	+23			
Sept. 24.....	-35	-3	-71	+31	-25	+84	-89	+73	-58		-26	-73			
Accumulated departures on Sept. 30															
	+1,694	-3,465	+5,803		+12,791	+8,981	-2,499	+133	+4823		-7,084	+7,035			

TABLE 2-a.—Late reports from Mount Washington. Lightning and wind have destroyed 2 pyrliometers this year

(Average daily totals of solar radiation (direct+diffuse) received on a horizontal surface at Mount Washington, N. H.)

Week beginning—		Week beginning—		Week beginning—	
1934	cal.	1934	cal.	1934	Cal.
Apr. 30.....	515	May 28.....	679	June 25.....	452
May 7.....	512	June 4.....	645	Aug. 20.....	527
May 14.....	641	June 11.....	359	Aug. 27.....	407
May 21.....	478	June 18.....	455		

TABLE 3.—Total, I_m , and screened, I_v , I_r , solar radiation intensity measurements, obtained during September 1934, and determinations of the atmospheric turbidity factor, β , and water-vapor content, w =depth in millimeters, if precipitated

AMERICAN UNIVERSITY, WASHINGTON, D. C.

Date and hour angle	Solar altitude	Air mass	I_m	I_g	I_r	β_{I_m-r}	β_{I_g-r}	β_{mean}	$I_{w=0}$	$I_{w=0}-I_m$	w	Air-mass type
									1.94	1.94		
									Percentage of solar constant			
<i>Sept. 17, 1934</i>	°	<i>m</i>	<i>gr. cal.</i>	<i>gr. cal.</i>	<i>gr. cal.</i>						<i>mm</i>	
4:43 a.	16 26	3.51	0.897	0.725	0.586	0.075	0.055	0.065	57.5	46.4	7	P _o
4:39 a.	17 54	3.23	.923	.726	.587	.073	.067	.070	58.4	47.6	7	
4:31 a.	18 40	3.10	.953	.728	.589	.068	.070	.069	60.8	49.1	11	
4:28 a.	19 14	3.00	.971	.725	.590	.057	.065	.061	63.3	50.1	12	
4:17 a.	21 20	2.74	1.037	.764	.615	.052	.068	.060	65.0	53.5	11	
4:13 a.	22 05	2.64	1.029	.765	.616	.064	.071	.072	64.8	53.0	12	
4:09 a.	22 50	2.57	1.066	.777	.633	.067	.079	.072	64.8	55.6	4	
4:06 a.	23 20	2.52	1.065	.778	.634	.059	.079	.069	65.8	55.5	5	
3:23 a.	31 10	1.93	1.192	.885	.702	.068	.056	.062	72.8	61.4	13	
3:20 a.	31 40	1.90	1.204	.886	.704	.069	.059	.064	72.8	62.1	9	
2:37 a.	38 54	1.59	1.274	.914	.729	.063	.059	.061	72.4	65.7	3	
2:32 a.	39 42	1.56	1.283	.914	.730	.067	.059	.063	72.6	66.1	2	
1:37 a.	47 14	1.36	1.323	.948	.749	.068	.048	.058	75.0	68.2	3	
1:33 a.	47 42	1.34	1.326	.948	.749	.068	.048	.058	75.6	68.9	4	
<i>Sept. 18, 1934</i>												
4:46 a.	15 36	3.68	.928	.721	.591	.058	.062	.062	57.0	48.4	3	P _o
4:41 a.	16 32	3.49	.938	.721	.592	.059	.069	.064	58.7	48.7	5	
4:33 a.	18 01	3.21	.993	.745	.596	.045	.055	.050	63.5	51.7	10	
4:28 a.	19 57	2.92	1.000	.745	.596	.052	.060	.056	64.0	51.2	17	
4:13 a.	21 50	2.66	1.032	.786	.637	.073	.073	.073	63.2	51.5	14	
4:08 a.	22 45	2.58	1.056	.787	.638	.066	.074	.070	64.8	54.9	7	
<i>Sept. 20, 1934</i>												
3:08 a.	32 54	1.84	.845	.662	.548	.200	.096	.148	59.2	44.0	50	N _{ro}
3:03 a.	33 44	1.80	.846	.662	.548	.200	.100	.150	59.0	44.1	48	
<i>Sept. 28, 1934</i>												
4:29 a.	16 15	3.55	.880	.717	.578	.079	.055	.067	60.1	45.5	28	P _o
4:25 a.	17 10	3.36	.903	.718	.581	.076	.058	.067	59.5	46.5	18	
4:02 a.	21 12	2.75	1.020	.761	.620	.068	.054	.061	65.0	52.6	16	
3:57 a.	22 05	2.64	1.032	.783	.621	.065	.053	.062	65.8	53.2	12	
3:14 a.	29 36	2.02	1.107	.842	.669	.088	.062	.075	68.6	57.7	10	
3:09 a.	30 27	1.97	1.096	.842	.669	.099	.065	.082	68.0	56.5	15	
2:28 a.	36 52	1.67	1.158	.837	.689	.088	.100	.092	69.3	59.7	7	
2:22 a.	37 47	1.63	1.140	.837	.689	.106	.102	.104	68.3	58.8	8	
0:26 a.	48 43	1.32	1.138	.822	.646	.124	.110	.117	71.7	58.6	34	
0:22 a.	48 52	1.32	1.138	.822	.646	.124	.110	.117	71.7	58.7	33	

Atmospheric conditions during turbidity measurements

Sept. 17: Temperature, 15° C.; wind, NW. 15; visibility, 30 miles; polarization, 60 percent; blueness of sky, 6.
 Sept. 18: Temperature, 14° C.; wind, NW. 13; visibility, 20 miles; polarization, 50 percent; blueness of sky, 5.
 Sept. 20: Temperature, 14° C.; wind, SE. 10; visibility, 20 miles; polarization, 54 percent; blueness of sky, 5.
 Sept. 28: Temperature, 15° C.; wind, E. 12; visibility, 30 miles; polarization, 54 percent; blueness of sky, 5.

TABLE 3.—Total, I_m , and screened, I_v , I_r , solar radiation intensity measurements, obtained during September 1934, and determinations of the atmospheric turbidity factor β and water-vapor content, w =depth in millimeters, if precipitated

BLUE HILL OBSERVATORY OF HARVARD UNIVERSITY

Date and hour angle	Solar altitude	Air mass	I_m	I_v	I_r	β_{I_m-r}	β_{I_v-r}	β_{mean}	$I_{w=0}$	$I_{w=0}-I_m$	w	Air-mass type
									1.94	1.94		
									Percentage of solar constant			
<hr/>												
Sept. 1, 1934	° ' "	m	$gr. cal.$	$gr. cal.$	$gr. cal.$						mm	
3:49 a. m.	29 10	2.04	1.065	0.796	0.645	0.116	0.086	0.101	63.8	7.9	3.0	P _o
2:55 a. m.	38 50	1.59	1.158	.835	.663	.091	.077	.084	72.3	14.1	43.0	
4:04 p. m.	26 56	2.26	.999	.754	.614	.098	.090	.094	62.8	10.4	7.9	N _{ro} T _m aloft.
<hr/>												
Sept. 11, 1934												
1:52 a. m.	44 56	1.41	1.351	.938	.750	.049	.062	.056	78.0	7.4	3.1	N _{ro}
0:55 a. m.	50 31	1.29	1.279	.888	.703	.074	.081	.078	77.0	11.0	17.8	
3:00 p. m.	35 13	1.73	1.263	.883	.690	.037	.028	.032	80.5	14.5	56.0	P _o , T _m aloft.
<hr/>												
Sept. 13, 1934												
3:00 p. m.	34 34	1.76	1.295	.885	.690	.021	.033	.027	80.0	12.6	25.0	P _o
4:14 p. m.	21 21	2.74	.983	.743	.592	.060	.055	.058	63.5	14.0	27.1	T _m aloft.
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Sept. 25, 1934												
1:42 a. m.	40 46	1.53	1.328	.876	.679	.022	.042	.032	82.0	13.2	35.0	T _m
1:17 p. m.	43 39	1.45	1.278	.874	.662	.033	.017	.025	84.0	18.3	60.+	Thin N _{ro}
4:18 p. m.	17 39	3.28	.889	.666	.536	.060	.074	.067	59.5	13.4	17.4	T _m aloft.
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Sept. 26, 1934												
3:58 a. m.	21 14	2.75	1.074	.756	.603	.033	.047	.040	71.1	15.7	51.0	N _{ro}
0:12 a. m.	46 33	1.38	1.351	.907	.706	.027	.026	.026	84.9	14.9	86.0	T _m aloft.
2:34 p. m.	34 08	1.78	1.229	.832	.649	.033	.051	.042	77.8	14.1	44.6	
2:50 p. m.	32 05	1.88	1.176	.799	.639	.042	.041	.042	77.1	16.2	60.+	N _{ro}
3:49 p. m.	22 48	2.57	.964	.723	.603	.096	.103	.100	58.5	8.6	3.2	T _m aloft.
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Sept. 28, 1934												
3:51 a. m.	21 52	2.66	1.220	.852	.716	.030	---	.030	73.6	10.5	6.9	N _{ro}
1:51 a. m.	39 14	1.58	1.399	.972	.719	.032	.047	.040	80.0	7.7	3.6	
2:19 p. m.	35 53	1.70	1.245	.878	.713	.066	.090	.078	71.9	7.5	2.9	N _{ro}
4:20 p. m.	13 20	4.28	.905	.709	.590	.055	.050	.052	57.4	10.6	4.5	

Atmospheric conditions during solar radiation measurements, Blue Hill Observatory of Harvard University

Date and time from apparent noon	Air temperature	Wind (Beaufort scale)	Visibility; scale, 0-10	Sky blue-ness	Cloudiness and remarks
September 1934					
1; 2:54 a. m.	17.8	SE 3	9, se, 6 sw	4	Few Cu, 1 Cl.
1; 3:40 p. m.	17.7	ESE 4	8-9	6	4 Cl.
11; 1:57 a. m.	19.4	WNW 2		4	4 Acu, 1 Cu.
11; 1:58 a. m.	20.6	NW 3	8	5	Few Acu, 6 Cu.
13; 3:01 p. m.	15.4	NE 4		8	5 Cl, few Acu, few Stcu.
13; 4:19 p. m.	14.9	ENE 3		7	5 Cl, 3 Cu, few Stcu.
25; 1:56 a. m.	19.3	NE 3		7	Few Cl, few Stcu, 1 Cu.
25; 0:56 p. m.	21.0	NNE 1		6	Few Cl, few Cu. (Cl'ds interrupted radiation meas'ts.)
25; 4:00 p. m.	19.8	NE 1	8+	7	Few Cl, few Cu.
26; 4:04 a. m.	18.3	S 2	7	8	Clear, with fog on horizon.
26; 2:37 p. m.	26.1	S 2	8	6	Few Cu.
26; 4:14 p. m.	25.0	SxW 3		6	Few Cl, few Cu.
26; 0:22 a. m.	23.9	S 2		6	Few Cu.
28; 4:00 a. m.	12.2	WNW 2	4, n, 6, w	6	Few Clst, lt. hz, Smk over Boston.
28; 2:00 a. m.	13.9	WNW 2	8 sw, 7 e	6-7	Smk to 5° over Boston.
28; 2:09 p. m.	18.3	WSW 2	7	6	Few Acu, sse horizon.
28; 4:12 p. m.	19.4	WSW 2		5	1 Acu & Cu, west horizon.

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, U. S. Navy, Superintendent U. S. Naval Observatory. Data furnished by the U. S. Naval Observatory in cooperation with Harvard and Mount Wilson Observatories. The difference in longitude is measured from the central meridian, positive west. The north latitude is positive. Areas are corrected for foreshortening and are expressed in millionths of the sun's visible hemisphere. The total area for each day includes spots and groups]

Date	Eastern stand- ard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longi- tude	Longi- tude	Lati- tude	Spot	Group		
1934								
	<i>h m</i>	<i>°</i>	<i>°</i>	<i>°</i>				
Sept. 1	11 22		No spots					U. S. Naval.
Sept. 2	10 34		No spots					Do.
Sept. 3	11 0		No spots					Mount Wilson.
Sept. 4	13 18		No spots					U. S. Naval.
Sept. 5	13 29		No spots					Do.
Sept. 6			No spots					Harvard.
Sept. 7	9 0		No spots					Mount Wilson.
Sept. 8	9 30		No spots					Do.
Sept. 9			No spots					Harvard.
Sept. 10	13 8		No spots					U. S. Naval.
Sept. 11	13 11		No spots					Do.
Sept. 12	11 40	-1.0	173.8	-30.0		9	9	Mount Wilson.
Sept. 13			No spots					Harvard.
Sept. 14	11 45	+25.0	173.4	-30.0		27		Mount Wilson.
		+50.0	198.4	+7.0		8	35	
Sept. 15	12 18	+62.0	196.9	+7.0	46		46	U. S. Naval.
Sept. 16	12 25	+77.0	198.6	+7.0		115	115	Mount Wilson.
Sept. 17	11 14		No spots					U. S. Naval.

POSITIONS AND AREAS OF SUN SPOTS—Continued

Date	Eastern stand- ard time	Heliographic			Area		Total area for each day	Observatory
		Diff. in longi- tude	Longi- tude	Lati- tude	Spot	Group		
1934								
Sept. 18.....	<i>h m</i> 11 26	°	°	°				U. S. Naval.
Sept. 19.....	11 30		No spots					Do.
Sept. 20.....	11 16		No spots					Do.
Sept. 21.....	9 15		No spots					Mount Wilson.
Sept. 22.....	11 43		No spots					U. S. Naval.
Sept. 23.....	12 37		No spots					Do.
Sept. 24.....	12 41		No spots					Do.
Sept. 25.....	14 29		No spots					Do.
Sept. 26.....	11 8		No spots					Do.
Sept. 27.....	11 49		No spots					Do.
Sept. 28.....	11 39				31		31	Do.
Sept. 29.....	13 0	+7.0	330.7	+23.0				Mount Wilson.
		-66.0	243.8	-12.0		6		
		+7.0	316.8	-2.5		4		
		+21.0	330.8	+22.0		8		
		+50.0	359.8	-29.0		6	24	
Sept. 30.....	11 30	+34.0	331.4	+23.0		62	62	U. S. Naval.
Mean								
daily area								
for 30 days.....								

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR SEPTEMBER 1934

(Dependent alone on observations at Zurich and its station at Arosa)

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

September 1934	Relative numbers	September 1934	Relative numbers	September 1934	Relative numbers
1	0	11	0	21	0
2	0	12	7	22	0
3	7	13	7	23	7
4	0	14	8	24	0
5	0	15	Wc16	25	0
6	0	16	9	26	0
7	0	17	8	27	0
8	0	18	0	28	9
9	0	19	0	29	14
10		20	0	30	21

Mean: 29 days=3.9.

c=New formation of a center of activity; E, on the eastern part of the sun's disk; W, on the western part; M, in the central circle zone.

AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. Little, in charge]

By L. T. SAMUELS

Free-air temperatures during September averaged lowest over the northwestern section of the country and highest over southern California. (See table 1.) Departures from normal, at those stations with sufficiently long records, were small, and were negative at the lower levels and positive at the upper levels.

Free-air relative humidities averaged lowest over the middle and southern Pacific coast and highest over the

middle Atlantic coast, the difference being about 30 percent.

Resultant free-air wind directions over the eastern part of the country contained a greater southerly component than normal. (See table 2.) In most cases the resultant velocities were below normal in this region. Elsewhere resultant directions were close to normal, and velocities generally above normal.